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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,882	01/20/2004	Nathaniel Frampton	2002-019-B	1881

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U.S. ARMY TACOM-ARDEC
ATTN: AMSTRA-AR-GCL
BLDG 3
PICATINNY ARSENAL, NJ 07806-5000

EXAMINER
CRAIG, DWIN M

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/707,882	FRAMPTON ET AL.	
	Examiner	Art Unit	
	Dwin M. Craig	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☒ Claim(s) *5-9, 12 & 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 have been presented for examination.

Oath/Declaration

2. It was not executed in accordance with either 37 CFR 1.66 or 1.68.

The oath and declaration are defective because: The oath was not properly signed. When signing an Oath and Declaration using an electronic signature then the signature portion must have forward slashes around the signature…section CFR 37s1.4 Nature of Correspondence and signature requirements:

S-signature . An S-signature is a signature inserted *between forward slash marks*, but not a handwritten signature as defined by § 1.4(d)(1). An S-signature includes any signature made by electronic or mechanical means, and any other mode of making or applying a signature not covered by either a handwritten signature of § 1.4(d)(1) or an Office Electronic Filing System (EFS) character coded signature of § 1.4(d)(3). Correspondence being filed in the Office in paper, by facsimile transmission as provided in § 1.6(d), with a signature in permanent dark ink or its equivalent, or via the Office Electronic Filing System as an EFS Tag(ged) Image File Format (TIFF) attachment, for a patent application, patent, or a reexamination proceeding may be S-signature signed instead of being personally signed (i.e., with a handwritten signature) as provided for in paragraph (d)(1) of this section. The requirements for an S-signature under this paragraph (d)(2) are as follows;
(i) The S-signature must consist only of letters, or Arabic numerals, or both, with appropriate spaces and commas, periods, apostrophes, or hyphens for punctuation, and the person signing the correspondence must insert his or her own S-signature with a first single forward slash mark before, and a second single forward slash mark after, the S-signature (e.g., /Dr. James T. Jones, Jr./);

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the

printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The Examiner objects to the use of the phrase *"to the at least one"* phrase being used in the current abstract because this is the type of phraseology that is commonly used in claim language. Amendment is required.

Claim Objections

4. Claim 12 is objected to because the word "*neural*" in line 5 is misspelled. Correction is required.

4.1 Claim 18 is objected to because the word *"recipe"* in line 3 is misspelled. Correction is required.

4.2 Dependent claims 5, 6, 7, and 9 are objected to because they appear to have a lack of antecedent bases. Dependent claims 5, 6, 7 and 9 all claim *"the optimization model"* whereas independent claim 1 discloses, *"at least one optimizer model"*, clarification and/or amendment is required.

4.3 Claim 8 is objected to because the abbreviation *"COM"* is being used in the claim. The claims should have the phrase "Component Object Model" amended into the claim in order to clarify the metes and bounds of the claimed subject matter. The examiner notes that the Applicants' have defined the term *"COM"* in paragraph [0082] of the specification. Amendment is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-3 and 7-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,781,432 Keeler et al. in view of US Patent 6,559,860 Hamilton.

5.1 As regards independent claim 1, *Keeler* discloses, *a model based controller system for controlling at least one neural network,* (Figures 1 and 1a and the descriptive text and Col. 3 lines 54-65 and Col. 4 lines 10-67) *comprising: a plurality of models, wherein said plurality includes at least one modeled component,* (Figure 5 and the descriptive text, specifically reference 96) *at least one recipe model,* (Col. 17 lines 65-67 and Col. 18 lines 1-18 and Col. 19 lines 54-63) *and at least one optimizer model,* (Figure 3 and Col. 6 lines 38-67 and Col. 7 lines 1-14) *and at least one of said at least one recipe models, and wherein each of said at least one optimizer models monitors at least one of said at least one recipes* (Figures 4-15 and Col. 7 lines 45-67 and Col. 8-17 and Col. 18 lines 1-18).

However, *Keeler* does not expressly disclose, *wherein each of said at least one modeled components is corresponded to each of the at least one devices for control and is communicatively connected to at least one modeled components; an executor resident above said plurality that coordinates at least one of the modeled components to provide for virtual control, and that monitors said at least one optimizer for input to modify the virtual control; and at least one interface that communicatively connects the executor to each of the at least one devices for control.*

Hamilton discloses, *wherein each of said at least one modeled components is corresponded to each of the at least one devices for control and is communicatively connected to at least one modeled components;* (Figures 2, 5, 8 & 9 and the descriptive text and Col. 4 line 5-47 and Col. 11 lines 28-67 and Col. 12 lines 1-13 *Et seq...*) *an executor resident above said plurality that coordinates at least one of the modeled components to provide for virtual control,* (Col. 16 lines 11-63) *and that monitors said at least one optimizer for input to modify the virtual*

control; and at least one interface that communicatively connects the executor to each of the at least one devices for control (Figures 11-15, Col. 12 lines 48-67 and Col. 13 lines 1-67 and Col. 14-16 and Col. 17 lines 1-64).

Keeler and *Hamilton* are analogous are because they are from the same problem solving area of modeling and simulating the effects of a model-based controller.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have used the modeling and virtual control methods of *Hamilton* in combination with the neural network based methods of *Keeler*.

The motivation for doing so would have been, to provide an easy to use method of programming and simulating a mechanical system to test out a model and a recipe without having to run the actual plant and to further be able to do so without having to have special programming skill, see *Hamilton* Col. 1 lines 49-67 and Col. 2 lines 1-32.

Therefore, it would have been obvious to combine *Hamilton* with *Keeler* to obtain the invention in claims 1-3 and 7-24.

5.2 As regards dependent claim 2, *Keeler* discloses, *wherein said optimizer model comprises a predictive coordinator of the at least one recipe models* (Figure 2 reference 34 and the descriptive text).

5.3 As regards dependent claim 3, *Keeler* discloses, *wherein the predictive coordinator suggests new control outputs from the at least one recipe model in accordance with a prediction for optimization* (Figure 5 and Figure 7 specifically, reference 166 "Predict Inputs" and Figure 9 and the descriptive text).

5.4 As regards dependent claim 7, *Keeler* discloses, *wherein the at least one optimization model learns improvements to optimization by monitoring performance of at least one of the devices for control when the virtual control is varied* (Figure 11-17 and the descriptive text and Col. 2 lines 39-54 simulated is the same as virtual, and Figure 3 and Col. 6 lines 38-67 and Col. 7 lines 1-63).

5.5 As regards dependent claim 8, *Keeler* does not expressly disclose, *wherein each of the at least one device for control and the neural inputs comprise COM components.*

However, *Hamilton* teaches, *wherein each of the at least one device for control and the neural inputs comprise COM components* (Col. 12 lines 14-58).

5.6 As regards dependent claim 9, *Keeler* discloses, *wherein the optimization model optimizes based on one selected from the group consisting of present, prior, or projected performance of the at least one device for control* (Figure 5 and Figure 7 specifically, reference 166 "Predict Inputs" and Figure 9 and the descriptive text).

5.7 As regards dependent claim 10, *Keeler* discloses, *wherein at least one of said optimizer models is corresponded to one of said modeled components* (Figures 2 reference 34 & Figure 4 and the descriptive text).

5.8 As regards dependent claim 11, *Keeler* discloses, *wherein the corresponded ones of said optimizer models are controlled by a master one of said optimizer models* (Figure 6 and the descriptive text).

5.9 As regards dependent claim 12, *Keeler* discloses, *wherein each of the at least one device for control comprises an I/O device component for receiving signals corresponded to the virtual control, a neural network component for receiving signals corresponded to the neural inputs,*

and an equipment component for taking action in accordance with the virtual control (Figure 11-17 and the descriptive text and Col. 2 lines 39-54 simulated is the same as virtual, and Figure 3 and Col. 6 lines 38-67 and Col. 7 lines 1-63 and Figures 1 and 1a and the descriptive text and Col. 3 lines 54-65 and Col. 4 lines 10-67 and Col. 17 lines 65-67 and Col. 18 lines 1-18 and Col. 19 lines 54-63).

5.10 As regards dependent claim 13, *Keeler* disclose, *wherein said at least one recipe model includes a process logic for operation of at least a portion of the at least on neural network* (Figure 1a and the descriptive text)

However, Keeler does not expressly disclose *a device logic for control of the at least one device for control.*

Hamilton teaches *a device logic for control of the at least one device for control* (Figure 8 reference 96 and Col. 11 lines 43-67 and Col. 12 lines 1-13).

5.11 As regards dependent claim 14, *Keeler wherein said at least one optimizer models includes a process logic optimizer for optimizing the process logic* (Figure 3 and Col. 6 lines 38-67 and Col. 7 lines 1-13).

However, *Keeler* does not expressly disclose the device logic.

Hamilton teaches *a device logic for control of the at least one device for control* (Figure 8 reference 96 and Col. 11 lines 43-67 and Col. 12 lines 1-13).

5.12 As regards dependent claim 15, *Keeler* discloses, *wherein the process logic comprises at least one selected from the group consisting of timing, settings, speeds, adjustments, and temperatures* (Figure 8 note "temp1").

5.13 As regards dependent claim 16, *Keeler* does not expressly disclose *wherein said interface communicates the virtual control to the at least one device for control via a plurality of tag points correspondent to aspects of the at least device for control.*

Hamilton teaches, *wherein said interface communicates the virtual control to the at least one device for control via a plurality of tag points correspondent to aspects of the at least device for control* (Figure 13 and the descriptive text, the examiner notes that *anchor points* are functionally equivalent to *tag points*).

5.14 As regards dependent claim 17, *Keeler* does not expressly disclose, *wherein data individually correspondent to each of the at least one devices for control is collected and archived in said executor.*

Hamilton teaches, *wherein data individually correspondent to each of the at least one devices for control is collected and archived in said executor* (Figure 10 reference 128 and the descriptive text and Col. 16 lines 10-64).

5.15 As regards dependent claim 18, *Keeler* discloses *wherein data individually correspondent to each process correspondent to each of said at least one-recipe models is collected and archived in said executor* (Figures 1 & 2 reference 26 "Train data" archives the recipe models, and Col. 4 lines 10-33 and Col. 17 lines 65-67 and Col. 18 lines 1-17 and Col. 19 lines 54-62).

5.16 As regards dependent claim 19, *Keeler wherein said at least one recipe model comprises at least two recipe models, and wherein a first of the at least two recipe models supervises a second of the at least two recipe models, and wherein each of the first recipe model and the second recipe model are on different nodes* (Figure 1a and the descriptive text and Col. 17 lines 65-67 and Col. 18 lines 1-17 and Col. 19 lines 54-62).

5.17 As regards dependent claim 20, *Keeler* does not expressly disclose, *further comprising a remote viewer, wherein each of the different nodes is viewable on at least one of said at least one remote viewer.*

Hamilton teaches, *further comprising a remote viewer, wherein each of the different nodes is viewable on at least one of said at least one remote viewer* (Figure 9 and the descriptive text and Col. 11 lines 43-56).

5.18 As regards dependent claim 21, *Keeler* discloses, *wherein said at least one optimizer model comprises at least two optimizer models, and wherein a first of the at least two optimizer models supervises a second of the at least two optimizer models, and wherein each of the first optimizer model and the second optimizer model are on different nodes* (Figure 1a and Col. 6 lines 38-67 and Col. 7 and Col. 8 lines 1-33).

5.19 As regards dependent claim 22, *Keeler* does not expressly disclose, *further comprising a remote viewer, wherein each of the different nodes is viewable on at least one of said at least one remote viewer.*

Hamilton teaches, *further comprising a remote viewer, wherein each of the different nodes is viewable on at least one of said at least one remote viewer* (Figure 9 and the descriptive text and Col. 11 lines 43-56).

5.20 As regards dependent claim 23, *Keeler* does not expressly disclose, *wherein said executor archives at least two selected from the group consisting of process data each of the devices for control, process logic for the virtual control, process variables for the virtual control, process parameters for the virtual control, and set points placed for the virtual control.*

Hamilton teaches, *wherein said executor archives at least two selected from the group consisting of process data each of the devices for control, process logic for the virtual control, process variables for the virtual control, process parameters for the virtual control, and set points placed for the virtual control* (Figure 8 and 11-15 and the descriptive text and Col. 1 lines 28-40, "...computer simulation programs..." simulations are virtual, and Col. 11 lines 28-67 and Col. 12 lines 1-58 and Col. 16 lines 10-63).

5.21 As regards dependent claim 24, *Keeler* does not expressly disclose, *wherein said at least one interface engages actual control of the at least one device for control in accordance with the virtual control.*

Hamilton teaches, *wherein said at least one interface engages actual control of the at least one device for control in accordance with the virtual control* (Figure 8 and 11-15 and the descriptive text and Col. 1 lines 28-40, "...computer simulation programs..." simulations are virtual, and Col. 11 lines 28-67 and Col. 12 lines 1-58 and Col. 16 lines 10-63).

6. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Keeler* as modified by *Hamilton* as applied to claims 1-3 and 7-24 above, and further in view of US Patent 6,757,591 *Kramer*.

6.1 *Keeler* as modified by *Hamilton* teaches a model based control system using a neural network as recited in claims 1-3 and 7-24 for the reasons above, differing from the invention as recited in claims 4-6 in that the combined teaching lacks

(claim 4) wherein each of the at least one recipes control at least one power plant,

(claim 5) wherein the at least one optimization model optimizes cogeneration of power based on current fuel charges from a local power company,

(claim 6) wherein the optimization model optimizes based on at least one selected from the group consisting of time of day, current solar input, and persons receiving power from the at least one power plant.

Kramer teaches (claims 4-5) a renewable energy and power generation system using fuzzy logic i.e. a neural network and a controller and performing optimization (Figure 1, Figure 4 reference 112 and Col. 1 lines 60-67 and Col. 2 lines 1-30 and Col. 3 lines 37-67 and Col. 4 lines 1-23 "...The electrical energy utilization is controlled by a subsystem that optimizes its value with respect to the local energy usage, the generation of electrical energy from the local energy source **60**, and electrical energy from the electric grid **18** provided to the building...").

Kramer as modified by *Keeler* and *Hamilton* are analogous art because they are all related to neural networks, model-based controllers and optimization of a model.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the power system control methods of *Kramer* with the Neural Network, fuzzy logic methods of *Keeler* as modified with the virtual simulation method of Hamilton because Kramer teaches that great efficiencies in power plant efficiency and energy usage can be achieved by using the methods disclosed therein *see Kramer* Col. 6 lines 41-52.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dwin M. Craig whose telephone number is (571) 272-3710. The examiner can normally be reached on 10:00 - 6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul L. Rodriguez can be reached on (571) 272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dwin McTaggart Craig

PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

9/28/06